

Closure Chronicles

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Table of Contents

Further Activities of the Closure Policy Team	1
Federal Facility Closure Council	2
Fiore Addresses Fourth International Decommissioning Symposium	3
Transfer of DOE-owned Properties to the City of Monticello, Utah	4
Nevada Provides Water to Mississippi Residents	4
Oak Ridge Ships Low-Level Waste to Nevada Test Site	5
New Site Closure Web Site On-line	5
Molten Salt Oxidation Commercialization	6
Personnel Changes at Headquarters	6
Fiore: "The Site Closure Program Will Deploy New Technologies to Help the Drive Toward Closure"	7
Evolution of Radionuclide Soil Action Levels at Rocky Flats	8



Further Activities of the Closure Policy Team

In an earlier article (volume 1, May 2000) we gave an overview of the focus and activities of the Closure Policy Team. During the last two months the Team has been busy with several projects related to its prime focus which is to develop policy, procedures and action plans concerning business closure activities (see box).

Business Close-Out Self-Assessment Process

The Closure Policy Team has finished the initial assessment process where the project manager of each of the 40 closure sites under the responsibility of the Office of Site Closure assessed the progress and adequacy of their business activities. The purpose of the self-assessment process is to develop integrated closure/end-state plans; identify site-specific and systemic issues and prepare needed action plans; identify site issues where the Office of Site Closure is needed to develop policy and provide guidance; and provide a baseline to monitor site progress on business closure activities. The assessment process showed some interesting results. Most of the activities were assessed as making adequate progress and pose no threat to the cleanup and closure process. However, about half of the assessments identified four activities as of some concern or major concern for the cleanup and closure efforts. These activities are:

- Post-contract benefit liabilities.
- Records retention.
- Departmental order and regulatory exemptions.
- Memoranda of agreement for EM projects at non-EM sites.

These activities are summarized below.

Post-Contract Benefit Liabilities

The Department has a huge liability for payment of post-closure pensions, medical insurance, and other vested benefits - estimated to be \$3-5 billion. The Office of Site Closure is working with the Office of Management and Administration, the Office of General Counsel, and the Office of Chief Financial Officer to accomplish the following:

- Collect information on projected costs of the post-contract benefits liability.
- Compare contractor benefits plans of all accelerated closure sites.
- Analyze options to pay off liability, manage the benefits programs, and contain costs.

Records Retention

An informal task group of DOE employees met in June to focus on unique records disposition problems at Rocky Flats and Ohio sites. The accelerated closure sites at Rocky Flats, Fernald, and Mound have no parent organizations which will naturally assume responsibility for management of records, both active and archived, after the sites are closed. Also, the Waste Isolation Pilot Plant (WIPP) shipment records are mounting. There is an indication that over 800 pages of documentation are required for each barrel of waste being shipped to WIPP. Since hundreds of thousands of barrels are expected to be shipped from closure and completion sites, EM needs to address both short- and long-term solutions of such records.

The informal group is planning to expand to include representatives from other Headquarters and field offices and to work with the National Archives and Records Administration to deal with the issues of ownership, shipment, storage, and WIPP records.

Departmental Order and Regulatory Exemptions

DOE Orders are normally written to impose requirements appropriate for operating facilities that use management and operating contracts, a situation that does not fit the majority of EM closure sites. Existing DOE Orders may impose excessive requirements resulting in unwarranted expenditures and unnecessary activities.

Business Closure Activities

- contract incentives;
- sale-of-site/end-state planning;
- post-contract benefit liabilities;
- records disposition;
- lawsuits;
- contractor and Federal employee transition and labor relations;
- personal property disposal;
- reindustrialization/leasing;
- order exemptions;
- documenting effective closure experiences;
- community interface;
- memoranda of agreement; and
- long-term surveillance and maintenance.

The Office of Site Closure will work with the sites to develop standardized justification for order exemptions or waivers. A key objective will be to foster a dialogue between Headquarters offices of primary interest in the orders and the sites. A possible approach is to establish a Field Coordinating Committee for Order Exemptions at Closure Sites. The work of this Committee would be to exchange information, share the workload for needed requirements analysis, and collectively support initiatives to influence the Headquarters oversight organizations

to reduce excessive and unneeded order requirements.

Memoranda of Agreement for EM Projects at Non-EM Sites

The self-assessment process shows that many of the small sites are part of national laboratories, defense weapons facilities, or are owned by private corporations. Many of these sites do not have formal memoranda of agreement (MOA) between the site owner and the Office of Environmental Management. The Closure Policy Team, in cooperation with the site leads and the Office of Integration and Disposition, will be developing standard requirements with specific content examples covering scope of work to be performed by EM, buildings and land to be transferred for cleanup, budget transfers, Federal and contractor employee transfers, responsibility for liabilities such as lawsuits, recommended end state, and long-term stewardship processes. We will be using as examples the MOAs recently executed with the Office of Science and the Office of Nuclear Energy, Science and Technology for reactor cleanup at the Brookhaven National Laboratory. The Closure Policy Team will continue to work with the Office of Long-Term Stewardship to ensure that all stewardship issues are well coordinated and integrated.

The Closure Policy Team will continue to use the "Closure Chronicles" and the Site Closure Web Site to promulgate information on business closure activities. In addition, we are considering periodic, telephonic meetings with the Headquarters Site Leads, the Operations/Field Offices points of contact and the Closure Policy Team to exchange information and keep us informed on developments and actions affecting business closure. We are planning an initial meeting in September. ■

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Federal Facility Closure Council

Over the past decade, successful and unsuccessful efforts to realign or close military bases, redevelop industrial brownfields and restore Federal lands created an extensive repository of experience that offers valuable lessons for the Office of Site Closure. At present, site closure lessons learned within DOE is based on a very limited set of sites or facilities that have closed. These two circumstances combine to focus the Office of Site Closure's strategic outlook and its organizational vision so that the Office can learn from other public and private sector experience and evolve into a model for site closure.

The Office of Site Closure initiated the Federal Facility Closure Council (F2C2) concept to improve its closure processes and practices by understanding those that worked and did not work for other organizations. The overall objective of the F2C2 is to establish a network of existing agency organizations for exchanging information and lessons learned related to facility closure. Specific objectives include, but are not limited to:

- Sponsoring various forums (Internet, symposiums, etc.) for effective exchange of facility closure information on best practices and lessons learned.
- Sponsoring multi-agency benchmarking initiatives or other program analyses to identify agency best practices for facility closure.
- Developing consistent Federal policy for planning, budgeting and overseeing facility closure.
- Participating in facility closure education, training and information transfer for members and other interested parties.

Article is continued on page 3.

Earlier this summer, a draft concept paper was provided to selected agency officials to gauge interest, accommodate other agency needs, and establish a working list of common agency goals and objectives. Additionally, Deputy Assistant Secretary for Site Closure James Fiore initiated a number of calls and face-to-face meetings with counterparts in key agencies to demonstrate the Office of Site Closure leadership is committed to making this initiative a success. Initial feedback on the Office of Site Closure's concept has highlighted the proposed forum does not currently exist, and other agencies believe they too can benefit from sharing closure problems and solutions.

Later this summer or early fall, it is expected that once appropriate agency points of contact are established a senior level steering committee will meet and refine the initial concept paper into a working charter. It is also expected that some initial cross-agency closure program analyses will be organized and implemented to quickly move the council into a results-oriented mode. It is hoped that the council will hold a Site Closure Symposium next fiscal year to broaden access to closure lessons learned, best practices and ongoing agency improvement initiatives. ■

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VISION

- Set the standard for safe, cost-effective closure of nuclear facilities.
- Be the model for transitioning Government activities from operations to closure.
- Achieve end-states that are safe now and enable protective, effective stewardship for the future.
- Deploy new technologies to help the drive toward closure.
- Focus on closing sites under our responsibility by 2006.

Fiore Addresses Fourth International Decommissioning Symposium

The Fourth International Decommissioning Symposium took place in Knoxville, Tennessee, June 13-16, 2000. As one of the conference sponsors, Deputy Assistant Secretary for Site Closure James Fiore gave a keynote presentation. After welcoming the Symposium participants, which included a large number of international attendees, Mr. Fiore set the tone for DOE's approach to decommissioning. He noted that even though there are no obvious breakthrough technologies needed to accomplish decommissioning, DOE is still looking for ways that are less labor intensive, quicker, more protective of workers, and most of all, cost less.

He then discussed the near-term and longer-term decommissioning challenges to the Office of Environmental Management (EM). In the near term, Mr. Fiore stressed that the focus must remain on achieving site closures at Fernald, Rocky Flats, and Mound by 2006, in accordance with DOE's Strategic Plan and commitments made to Congress. For the longer term, he noted that the large inventory of decommissioning projects remaining within EM, as well as those that will become part of the program when the "pipeline" opens in 2002, will require all of DOE and its contractors' expertise in order to be addressed in a timely and cost-effective manner. In providing a context for the decommissioning challenge currently facing the Office of Site Closure, Mr. Fiore noted that, as of September 1999, the Office of Site Closure was responsible for nearly 1500 individual facilities, of which 289 have already been decommissioned.*

In describing how DOE would ensure it is ready to decommission facilities, both in the near term and longer term, Mr. Fiore articulated the objectives of decommissioning: (1) to ensure DOE learns from every decommissioning project; (2) to maximize information sharing among DOE and its contractors, the commercial industry, and other countries; and (3) to improve performance through better sequencing, more efficient operations, and enhanced cooperation among the DOE sites and between DOE and its regulators.

Both the general approach and specific areas of focus that will enable the Office of Site Closure to achieve its five vision statements were highlighted in the presentation. Mr. Fiore then encouraged symposium participants to pursue these, specifically to promote more effective information exchange among DOE and its contractors and the commercial and international decommissioning industry, and to focus on additional demonstrations and deployments that would result in facilities being decommissioned and provide new operational data and lessons learned to share. The EM Lessons Learned web site at <http://www.em.doe.gov/lessons> was specifically flagged for participants to use in order to promote information exchange.

Mr. Fiore concluded that while the decommissioning challenge facing EM is formidable, DOE is on the right path to meet that challenge.

** For those who are unfamiliar with the "pipeline," this is the term EM uses to describe the process of adding facilities not currently managed within the EM program to the inventory of facilities for which EM is responsible. In 1996, EM temporarily halted the transfer of facilities into EM to enable the current owner and EM to gain more knowledge about these facilities. Transfers of new facilities into EM for decommissioning are expected to resume in 2002.*

Transfer of DOE-owned Properties to the City of Monticello, Utah

The transfer of 383 acres from DOE ownership to the City of Monticello, Utah, was successfully completed on June 28, 2000, when the National Park Service (NPS) deeded the lands to the City. The Deed was signed by the Monticello City Council at its June 28 meeting.

Monticello is a small town located in the southeastern corner of Utah in San Juan County, approximately 55 miles south of Moab, Utah. The Vanadium Corporation of America constructed the original Monticello mill in 1941 with Federal Government funding to provide vanadium during World War II. The U.S. Atomic Energy Commission purchased the mill site in 1948 for uranium production and milling operations continued until



Operations at the Monticello, Utah, mill started in 1944 and ended in 1960

1964 when the mill was dismantled. More than 2.5 million cubic yards of low-level radioactive mill tailings and contaminated soils were left behind. This contamination resulted in the establishment of two National Priorities List (NPL) sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). One of these NPL sites, the Monticello Vicinity Properties, was delisted on February 28, 2000.

The mill site was 110 acres in size and has been remediated; there were an additional 273 DOE-owned acres adjacent to the mill site. Working with the local community and the Monticello Site Specific Advisory Board, DOE, with



Completed millsite remediation. Restoration will be completed by 2001

concurrence from the Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ), agreed that the lands should be transferred to the City of Monticello for recreational purposes.

DOE entered into a Cooperative Agreement with the City of Monticello wherein DOE would pay the city a lump sum to restore the mill site in accordance with design and access specifications required by DOE, EPA and UDEQ, allowing the city to configure the lands to its proposed recreational uses. At the same time, DOE began the process of transferring the lands to the City of Monticello through the Federal Lands to Parks Program administered by the NPS and General Services Administration. Because remediation of groundwater beneath the site has not been completed, CERCLA requires that a Covenant Deferral Request demonstrate that the land is suitable for early transfer. The Covenant Deferral Request was approved by the EPA and signed by the Governor of Utah. ■

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Nevada Provides Water to Mississippi Residents

The U.S. Department of Energy will be providing a new water system to residents of Lamar County, Mississippi.

The Tatum Salt Dome, beneath DOE's Salmon Site in Lamar County, was the location of two nuclear tests conducted in 1964 and 1966. Environmental testing on samples of the area's water, soil and vegetation, taken over the period of more than 20 years since the Salmon Site was closed, has shown no evidence that any radioactivity has entered the food or drinking water supplies of area residents.

"Although, we do not believe there is a risk, we recognize that there is a public perception of danger from potential contamination," said Pete Sanders, Salmon Site project manager for the DOE Nevada Operations Office (DOE/NV). "When we realized it actually would

save taxpayer dollars in the long run - as it costs less to provide a new water system than it would to continue to monitor private wells in the area for decades - we agreed to Lamar County's request for a new water system."

On January 27, DOE/NV and Lamar County officials met in Purvis, Mississippi, to sign a Federal Grant providing \$1.9 million for a community water system that will serve homes in the Salmon Site area.

"What we have here is a good-will gesture toward the community," said former Lamar County Supervisor Bill Bishop. "Seeing this all come together is the proudest accomplishment of my career." Bishop, along with Jerry Martin, District Representative for Mississippi Congressman Gene Taylor, played a key role in working with DOE to make the

project a reality.

Providing the alternative community water system for Salmon Site area residents was the culmination of more than two years of studies and negotiations. Lamar County received \$100,000 from DOE/NV in 1997. The funds were to enable the county to conduct a feasibility study of the water project.

"I can't tell you how delighted I am that an idea I had so long ago is now real," said Martin. "The DOE has done everything it can to work with us. The results speak for themselves."

Construction of this system, under the direction of Lamar County, is expected to begin this fall. ■

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Oak Ridge Ships Low-Level Waste to Nevada Test Site

Oak Ridge for the first time shipped low-level waste (LLW) to the Nevada Test Site (NTS) for disposal under the recently issued DOE Programmatic Record of Decision (ROD). The logjam impeding the flow of nuclear waste into and out of Oak Ridge was broken this year by issuance of the DOE Programmatic ROD for LLW and mixed low-level waste (MLLW). Under the ROD issued by DOE in 1996 for the NTS Environmental Impact Statement, Oak Ridge was unable to ship low-level legacy waste to NTS. In addition, due to lack of a Waste Management Programmatic ROD for low-level radioactive waste, Oak Ridge was also unable to ship LLW to other DOE sites for disposal. Since that time, and as on-site disposal became limited, no LLW waste has been shipped from Oak Ridge except for limited shipments to

commercial sites. As a result, Oak Ridge accumulated significantly large quantities of LLW, currently estimated at about 75 percent of the DOE complex-wide LLW inventory. The recent Programmatic ROD for MLLW and LLW disposal has reversed the accumulation of LLW and opened the way for better relations with the State of Tennessee.

The first shipment of LLW from Oak Ridge was disposed at NTS on April 14, 2000. This shipment consisted of solidified supernate (also known as "monoliths") from the Oak Ridge National Laboratory's (ORNL) Melton Valley Storage Tanks. Oak Ridge has approximately 240 monoliths (1,200 cubic meters) stored at ORNL. The monoliths are six-feet high and six-feet in diameter, steel encased concrete cylinders that are currently stored on an outdoor pad. The pad is within the footprint of a site

planned for remedial action within the next five years. Oak Ridge plans complete disposal of the monoliths within the next 18 to 24 months.

For years DOE has wanted to ship nuclear wastes to Oak Ridge from sites around the country to burn in the agency's toxic-waste incinerator. The State of Tennessee, however, has repeatedly rejected those plans, partly because DOE treatment and disposal facilities elsewhere have not been opened to receive Oak Ridge waste. The Tennessee regulators have recently approved a plan for Oak Ridge to receive off-site MLLW to be burned in the toxic-waste incinerator, partially as a result of the shipment of LLW to NTS. ■

For more information, contact Jitendra Desai, EM-32, at (301) 903-1434 or e-mail at jitendra.desai@em.doe.gov



Loading the first waste shipment from Oak Ridge to the Nevada Test Site



The first waste shipment leaving Oak Ridge for the Nevada Test Site



The first Oak Ridge LLW shipment being unloaded at the Area 3 Radioactive Waste Management Site

New Site Closure Web Site On-line

The Office of Site Closure recently went on-line with its new web site designed to communicate the closure vision including the program's scope and key management strategies while providing a resource library of information and tools to assist in executing the site closure mission. The Office of Site Closure Policy Team has been working diligently for several months to compile and collect pertinent information across a wide range of topical areas to offer DOE Headquarters and Field Offices, as well as interested

stakeholders, insight into the challenges and opportunities facing the Office of Site Closure as it focuses on cleanup and closing DOE sites. Some features of the web site include:

- Site Closure Highlights
- Closure Site Fact Sheets
- List of Closure Sites
- Business Closure Activities
- Publications (papers, mini guides)
- Closure Chronicles Newsletter
- Program Points of Contact

The Site Closure web site can be accessed through the Office of Environmental Management's web site at www.em.doe.gov or directly at apps.em.doe.gov/closure. If you have ideas or areas that you would like to see featured on the web site please contact Rosemarie Berkau of the Closure Policy Team at (301) 903-3010 or e-mail at rosemarie.berkau@em.doe.gov. ■

Molten Salt Oxidation Commercialization

In the early 1990s, the Office of Environmental Management began exploring alternative incineration technologies and created the Expedited Technology Demonstration Project (ETDP) to develop these alternatives. In June 1996, the ETDP selected Molten Salt Oxidation (MSO) as the preferred incineration alternative.

MSO is a thermal, non-flame process for destroying organic constituents in mixed waste (MW), hazardous waste, and energetic materials. Organic constituents are oxidized in a molten salt bath and converted to CO₂, N₂, and H₂O. Inorganic constituents, particularly heavy metals and radionuclides, are captured in the molten salt bath. The salt can be recycled to minimize secondary waste.

In 1998, EM constructed the integrated MSO treatment system at Lawrence Livermore National Laboratory (LLNL). The integrated system includes the typical MSO thermal treatment system with a built-in salt recycling unit. This unit is the only successful demonstration of an integrated treatment system using MSO technology, testing at 99.999% destruction removal efficiency on over 20 different liquid and four solid organic test feeds. The MSO system has also successfully treated three actual low-level waste streams and processed seven batches of spent salt in the recycling system. As a result, this project was named Northern California's American Institute of Chemical Engineers "1999 Research Project of the Year."

In FY2000, the Oakland Operations Office awarded a contract for the commercialization of the integrated MSO system to ATG, Inc. of Richland, Washington. Under the terms of this cost-sharing contract, ATG will take the existing integrated MSO system and upgrade its treatment capacity by 300%. ATG will then acquire a Research, Development and Demonstration permit and process 1,740 gallons of MW. After the development and

successful demonstration of this technology, ATG will obtain a Resource Conservation and Recovery Act Part B permit modification and treat an additional 2,500 gallons. DOE also holds two fixed price options for treating an additional 1,000 gallons per option, for a total of up to 6,240 gallons of treatment capacity under this contract.

Both DOE and ATG believe that there are significant benefits of MSO commercialization. MSO has already been demonstrated as a viable technology, and the addition of this system complements ATG's existing treatment technologies by allowing their GASVIT™ system, which has strict limits on a waste's chlorine content, to concentrate solely on non-chlorinated waste streams. ATG believes that the MSO technology has a large market potential, and with a thermal treatment permit already in place for its GASVIT™ system, they should be able to quickly capitalize on this potential by avoiding regulatory delays. The DOE complex benefits from MSO commercialization as multiple sites would be able to use this contract vehicle to dispose of their MW, allowing them to eliminate certain waste streams and meet their Site Treatment Plan milestones. LLNL researchers will assist ATG in the upgrading and operation of the system, while the Oakland Operations Office will actively seek users of the MSO system to maximize future technology deployments. ■

For more information, contact Gordon Langlie, EM-34, at (301) 903-7119 or e-mail at Gordon.Langlie@em.doe.gov



MSO pilot scale demonstration equipment

Personnel Changes at Headquarters

Assistant Secretary for Environmental Management, Carolyn Huntoon, recently announced several personnel actions as part of EM's reorganization. The Office of Site Closure is pleased by the announced selections and reassignments to key management positions which moves its organization toward a stable management structure.

Ms. Patty Bubar will move from her current position as Director of the Rocky Flats Office to assume a new role as the Associate Deputy Assistant Secretary for Integration and Disposition. Although losing the direct benefit of Patty's talents, the office gains valuable indirect benefits by having someone intimately familiar with the Office of Site Closure's new vision and culture supporting a key internal partner.

Similarly, Mr. John Lehr's reassignment from the Office of Science and Technology to Director of the Small Sites Closure Office brings an insider's understanding of Science and Technology's issues and work processes.

In related reassignments, Mr. William Murphie will shift from his current role as Director of the Ohio Office to Director of the Rocky Flats Office and Ms. Kim Chaney will move from the Small Sites Closure Office to Director of the Ohio Office.

While a few offices will experience some change, overall the Office of Site Closure remains unchanged in its good fortune to have a team of seasoned and results-oriented managers.

Future issues of the "Closure Chronicles" will continue to highlight significant personnel actions (promotions, reassignments, awards, etc.). Readers are encouraged to submit information on personnel actions at Headquarters or Field offices to the "Closure Chronicles." ■

For more information, contact Marc Jones, EM-30, at (301) 903-6216 or e-mail at Marc.Jones@em.doe.gov

Fiore: "The Site Closure Program Will Deploy New Technologies to Help the Drive Toward Closure"...

Typically, site project managers have only sketchy information, at best, regarding their contaminant problems. Why? Our EM characterization technologies have been incapable of providing continuous 3-D mapping of subsurface terrain, including beneath building slabs. The lack of comprehensive characterization data may contribute to skepticism among some site managers regarding investments in otherwise promising innovative remedial technologies. This situation, in turn, has increased deployment costs. But, now, the Office of Site Closure may have found an answer to this dilemma, a most exciting commercial characterization technology.

The technology is called Passive Magnetic Resonance Anomaly Mapping (PMRAM™), a singularly unique and unusually novel non-intrusive characterization technology invented in the Ukraine by a small company, Geoecolog. The exclusive license to deploy PMRAM™ in this country belongs to a likewise small enterprising U.S. geological firm. The technology currently is being deployed with major U.S. companies. Geoecolog had developed PMRAM™ over a period in excess of 20 years for mapping oil deposits in Eastern Europe reportedly to incredible depths of six kilometers. It determines detailed subsurface mappings of geological structures, hydrological vector flows, buried objects, and the relative concentrations of chemical contaminants.

The Office of Site Closure has followed the operation of PMRAM™ over a period of several months. An immediate observation was that this technology operates much faster and at lower costs when compared with other characterization technologies. It has produced performance results that have been very impressive and sufficient to merit serious consideration for deployment, as well as for further enhancement of its capabilities.

During the Cold War, the Soviet Union is believed to have invested large amounts of funds into electromagnetic research that may have spawned

technologies about which the Western World would have no knowledge. PMRAM™ may be such a product from the Iron Curtain days which may explain why the technology and particularly its science are unknown to the U.S. scientific community. So far, Geoecolog has withheld this information for proprietary reasons.



Ukrainian operator as component of bio-sensor unit



Operator mapping contaminants under building slab

The unique feature of PMRAM™ is that the system electronics and the human operator are combined into a single bio-sensor unit which passively discerns subsurface anomalies. The bio-sensing operator is electrically connected at the wrists to the system electronics which, together with the computer equipment, are harnessed to his body. He carries in one hand an antenna apparatus that extends to the ground surface. The antenna system design is crucial to the operational limits of the technology. The equipment also houses chemical "resonator" samples,

e.g., contaminants-of-concern, water, and rock, as standards essential for critically tuning the bio-sensor unit to each sample's electromagnetic signature. The operator detects these signatures as anomalies when he conducts aerial and vertical distribution mappings.

Three closure sites recently tested the PMRAM™ technology. In early July, an 11-day test was conducted at the Oak Ridge, Tennessee ETTP/1070A burial ground, the K-725 Beryllium Pad, and the K-770 scrap metal area. Upon completion, the PMRAM™ team immediately went to Ashtabula, Ohio for two days to map the "CAMU" area there. Following this, the team moved on to the Fernald, Ohio site, Incinerator Pad No.3, for a two-day test. Results at Oak Ridge exceeded the expectations of contractor Bechtel-Jacobs and the DOE site management. The PMRAM™ data is currently being correlated with the bore sample data from each of the three sites. While at Fernald, the technology team held a briefing which included representatives from Oak Ridge, Mound, the Portsmouth Gaseous Diffusion Plant, Paducah, Ashtabula, Sandia National Laboratory, and the Office of Site Closure.

The Office of Site Closure and the Office of Science and Technology are jointly sponsoring an independent peer review of the PMRAM™ technology by the American Society of Mechanical Engineers standard process. The review, scheduled for September 19, 2000, is based upon the site tests and is designed to evaluate the technology's benefit to site project managers for making their remedial action decisions. ■

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Evolution of Radionuclide Soil Action Levels at Rocky Flats

During the past four years the process of determining the degree to which the soils will be remediated at Rocky Flats has been evolving. In 1996, EPA, the Colorado Department of Public Health and Environment (CDPHE), and DOE entered into the Rocky Flats Cleanup Agreement (RFCA) which specified the roles of the various agencies in the cleanup process. As part of that agreement, the three agencies in 1996 established and published interim Radionuclide Soil Action Levels (RSALs) to guide cleanup activity.

To assure adequate public input into the cleanup program, DOE supports the Rocky Flats Citizens Advisory Board (CAB). That board, along with other groups, became concerned that the interim RSALs were too high. As a result, the CAB established the Radionuclide Soil Action Levels Oversight Panel (RSALOP) to provide oversight for an independent study of the interim RSALs. After a competitive bid process, the panel selected the Risk Assessment Corporation

(RAC) to perform this study. The review began in October 1998 and was completed in February 2000. This review included: reviewing cleanup levels at other DOE sites and comparing them to Rocky Flats, reviewing computer models on radionuclide cleanup for potential use at Rocky Flats, evaluating the parameters and land use scenarios proposed by RFCA agencies, and carrying out independent calculations to determine new RSALs, if necessary.

The RAC final report was issued in February 2000. The RAC recommended RSALs be 35 pCi/g for plutonium. The interim RSALs established by EPA, CDPHE, and DOE are 651 pCi/g for plutonium. The major reasons for the significantly lower RSALS recommended by RAC are the land use scenarios used to drive the RSAL determination, the dose levels for a future land use that reflects a loss of institutional controls, and the loss of cover vegetation caused by a range fire.

The Office of Site Closure is currently

working on clarifying guidance in this area. In the meantime the establishment of revised RSALs at Rocky Flats is moving forward. A requirement of the interim RSAL report in 1996 was to annually review new information that could affect the interim RSAL. In June a Rocky Flats Cleanup Agreement RSAL Action Group was formed by the DOE, EPA and the State to evaluate new scientific and regulatory information.

As the process of establishing RSALs at Rocky Flats continues to evolve, two important lessons learned will continue to be implemented: 1) a need for continuous public involvement in the cleanup of sites and 2) a need for clear guidance on the use of parameters, land use, and appropriate dose levels in determining radionuclide soil action levels. ■

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